

AMENDMENTS TO THE CLAIMS

Claims 1-3 (Canceled)

Claim 4 (Previously Presented): A nitride compound semiconductor element comprising:

a sapphire substrate;

a first single crystalline layer of AlN formed on said sapphire substrate;

a second single crystalline layer formed on said first single crystalline layer, said second single crystalline layer being made of $\text{Al}_x\text{Ga}_{1-x}\text{N}$ ($0.85 \leq x \leq 0.95$) and having a thickness of equal to or more than $0.7 \mu\text{m}$ and equal to or less than $3 \mu\text{m}$; and

a device structure section of a nitride compound semiconductor formed on said second single crystalline layer,

wherein said first single crystalline layer is doped with carbon having a concentration of equal to or more than $3 \times 10^{18} \text{ cm}^{-3}$ and equal to or less than $1 \times 10^{20} \text{ cm}^{-3}$.

Claim 5 (Previously Presented): The nitride compound semiconductor element according to claim 4, wherein said sapphire substrate either has no warp or is warped concavely toward said device structure section.

Claim 6 (Previously Presented) The nitride compound semiconductor element according to claim 4, further comprising:

a single crystalline AlN protective layer formed directly on said second single crystalline layer for preventing Ga atoms from evaporating from said second single crystalline layer to thereby protect said second single crystalline layer, said AlN protective layer having a thickness of equal to or more than 1 nm and equal to or less than 10 nm.

Claim 7 (Previously Presented) The nitride compound semiconductor element according to claim 4, further comprising:

an AlN layer formed between said first single crystalline layer and said second single crystalline layer, said AlN layer containing no impurity or containing impurity having a concentration of less than $3 \times 10^{18} \text{ cm}^{-3}$.

Claim 8 (Previously Presented): The nitride compound semiconductor element according to claim 4, wherein said nitride compound semiconductor element comprises a semiconductor laser and wherein said device structure section comprises:

a first conductive-type semiconductor layer;
an active layer formed on said first conductive-type semiconductor layer for emitting light by current injection; and
a second conductive-type semiconductor layer formed on said active layer.

Claim 9 (Original): The nitride compound semiconductor element according to claim 8, wherein said active layer contains a well layer made of $\text{Ga}_{1-z}\text{In}_z\text{N}$ ($0.15 \leq z \leq 0.3$).

Claim 10 (Previously Presented): The nitride compound semiconductor element according to claim 4, further comprising:

a lattice modification layer formed between said second single crystalline layer and said device structure section, said lattice modification layer being made of $\text{Al}_y\text{Ga}_{1-y}\text{N}$ ($0.25 \leq y \leq 0.75$) and having a thickness of equal to or more than $0.3 \mu\text{m}$ and equal to or less than $3 \mu\text{m}$.

Claim 11 (Previously Presented): The nitride compound semiconductor element according to claim 10, wherein said nitride compound semiconductor element comprises an optical switch or a field effect transistor.

Claim 12 (Original): The nitride compound semiconductor element according to claim 10, wherein said device structure section has a heterojunction of an AlN layer and a GaN layer.

Claim 13 (Previously Presented): The nitride compound semiconductor element according to claim 12, wherein said nitride compound semiconductor element comprises an optical switch.

Claims 14-20 (Canceled)

Claim 21 (Previously Presented) A method of making a nitride compound semiconductor element, the method comprising

- providing a sapphire substrate;
- depositing on the sapphire substrate a first single crystalline layer of AlN;
- depositing on the first single crystalline layer a second single crystalline layer of $\text{Al}_x\text{Ga}_{1-x}\text{N}$ ($0.85 \leq x \leq 0.95$) having a thickness of equal to or more than $0.7 \mu\text{m}$ and equal to or less than $3 \mu\text{m}$;
- depositing on the second single crystalline layer a device structure section of a nitride compound semiconductor; and
- producing the semiconductor element of claim 4.

Claim 22 (Previously Presented): The nitride compound semiconductor element according to claim 4, wherein said nitride compound semiconductor element comprises a semiconductor laser.

Claim 23 (New): The nitride compound semiconductor element according to claim 4, wherein said first single crystalline layer of AlN has a thickness of equal to or more than 10 nm and equal to or less than 50 nm .